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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,222	02/12/2004	Erol Girt	50103-528	3152

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MCDERMOTT, WILL & EMERY  
600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER

BERNATZ, KEVIN M

ART UNIT PAPER NUMBER

1773

DATE MAILED: 12/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8

**Office Action Summary**

Application No.

10/776,222

Applicant(s)

GIRT ET AL.

Examiner

Kevin M. Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Amendments to claim 1, filed on September 22, 2006, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 103***

3. Claims 1, 13, 14, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lambeth et al. (WO 99/24973) in view of Nakamura et al. (U.S. Patent App. No. 2004/0027868 A1).

Regarding claims 1, 13, 14, 17, 18 and 20, Lambeth et al. is relied upon as described in Paragraph 7 of the Office Action mailed June 23, 2006.

Lambeth et al. fail to disclose the layer of different material comprising Ru, instead teaching a layer of hcp Titanium ("*Ti(0002)*").

However, the Examiner deems that hcp titanium layers and hcp Ru layers or Ru alloy layers are known equivalents in hcp non-magnetic interlayers for use in controlling the crystallographic growth, orientation and properties of perpendicular recording media, as taught by Nakamura et al. (*Paragraphs 0011, 0042 and 0055*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Ti and Ti alloys and Ru and Ru alloys

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are equivalents in the field of hcp non-magnetic interlayers for use in controlling the crystallographic growth, orientation and properties of perpendicular recording media. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

4. Claims 1 – 5 and 11 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abarra et al. (U.S. Patent App. No. 2003/0186086 A1) in view of the knowledge in the art, as exemplified by Chen et al. (U.S. Patent App. No. 2004/0191578 A1) and/or Chen et al. (U.S. Patent No. 6,759,149 B1) and/or Girt et al. (U.S. Patent No. 6,777,112 B1) and/or Lal et al. (U.S. Patent No. 5,922,442) and/or Malhotra et al. (IEEE Trans. Mag., 36(5), 9/2000, 2309 – 2311).

Regarding claims 1 – 5 and 11 - 20, Abarra et al. is relied upon as described in Paragraphs 8 and 11 of the Office Action mailed June 23, 2006.

Abarra et al. fail to disclose the layer of different material comprising Ru, instead teaching that element 54 comprises a *bcc Cr-M alloy*, such as CrMo, CrTi, CrV or CrW.

However, the Examiner deems that *bcc CrRu* layers and *bcc Cr-M alloy* layers are known equivalents in *bcc* non-magnetic interlayers for use in controlling the crystallographic growth, orientation and properties of subsequently deposited *hcp* based Co-alloy intermediate or recording media, as taught by Chen et al. ('578 A1) (Paragraphs 0032 – 0033), Chen et al. ('149 B1) (col. 5, lines 29 – 33 and col. 7, lines 52 – 59), Girt et al. (col. 7, lines 7 – 20), Lal et al. (col. 3, line 65 bridging col. 4, line 14), and Malhotra et al. (entire disclosure).

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Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, CrRu and Cr-M alloys are equivalents in the field of *bcc* non-magnetic interlayers for use in controlling the crystallographic growth, orientation and properties of subsequently deposited *hcp* based Co-alloy intermediate or recording media.

5. Claims 1 – 5 and 11 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abarra et al. ('086 A1) in view of Yamamoto et al. (U.S. Patent App. No. 2004/0043258 A1) and the knowledge in the art, as exemplified by Chen et al. ('578 A1) and/or Chen et al. ('149 B1) and/or Girt et al. ('112 B1) and/or Lal et al. ('442) and/or Malhotra et al. (IEEE Trans. Mag., 36(5), 9/2000, 2309 – 2311).

Regarding claims 1 – 5 and 11 - 20, Abarra et al. and Yamamoto et al. are relied upon as described in Paragraph 12 of the Office Action mailed June 23, 2006.

Neither Abarra et al. nor Yamamoto et al. disclose the layer of different material comprising Ru, instead teaching that element 54 comprises a *bcc* Cr-M alloy, such as CrMo, CrTi, CrV or CrW.

However, the Examiner deems that *bcc* CrRu layers and *bcc* Cr-M alloy layers are known equivalents in *bcc* non-magnetic interlayers for use in controlling the crystallographic growth, orientation and properties of subsequently deposited *hcp* based Co-alloy intermediate or recording media, as taught by Chen et al. ('578 A1) (Paragraphs 0032 – 0033), Chen et al. ('149 B1) (col. 5, lines 29 – 33 and col. 7, lines

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52 – 59), Girt et al. (*col. 7, lines 7 – 20*), Lal et al. (*col. 3, line 65 bridging col. 4, line 14*), and Malhotra et al. (*entire disclosure*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, CrRu and Cr-M alloys are equivalents in the field of *bcc* non-magnetic interlayers for use in controlling the crystallographic growth, orientation and properties of subsequently deposited *hcp* based Co-alloy intermediate or recording media.

6. Claims 1 – 5, 11 – 13, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. ('258 A1) in view of Nakamura et al. ('868 A1).

Regarding claims 1 – 5, 11 – 13, 17 and 20, Yamamoto et al. is relied upon as described in Paragraph 9 of the Office Action mailed June 23, 2006.

Yamamoto et al. fail to disclose the layer of different material comprising Ru, instead teaching a layer of *hcp* CoCr.

However, Nakamura et al. teach that instead of using a layer of *hcp* CoCr between the *fcc* layer and the magnetic layer, that one should use a layer of *hcp* Ru in order to improve the lattice matching between the seed layer and the magnetic layer, and hence improve the perpendicular magnetic properties (*Paragraphs 0032 – 0034 and examples*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Yamamoto et al. to utilize a layer comprising Ru meeting applicants' claimed limitations as taught by Nakamura et

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al., since such a layer can improve the lattice matching between the seed layer and the magnetic layer, and hence improve the perpendicular magnetic properties.

7. Claims 14 – 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. ('258 A1) in view of Nakamura et al. ('868 A1) as applied above, and further in view of Abarra et al. ('086 A1).

Regarding claims 14 – 16, 18 and 19, Yamamoto et al. and Nakamura et al. are relied upon as described above.

Abarra et al. is relied upon as described in Paragraph 13 of the Office Action mailed June 23, 2006.

### ***Response to Arguments***

8. **The rejection of claims 1 – 5 and 11 - 20 under 35 U.S.C § 103(a) – various references**

Applicant(s) arguments have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Applicants' amendment resulted in embodiments not previously considered (i.e. "comprising Ru") which necessitated the new grounds of rejection, and hence the finality of this action.

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The Examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

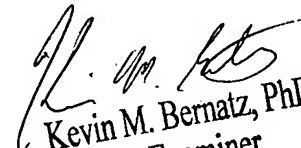
If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB  
December 7, 2006

  
Kevin M. Bernatz, PhD  
Primary Examiner